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REDISCOVERY OF THE GENUS NEOPARRYA MATHIAS (UMBELLIFERAE)

WILLIAM A. WEBER¹

Neoparrya Mathias² is a monotypic genus of Umbelliferae endemic in the southern Rocky Mountains. *N. lithophila* was described from a single collection of Parry from his 1867 expedition for the Pacific Railroads (Palmer 1869). Paradoxically, the species was never again found in nature until the spring of 1957, when the writer, having reconstructed Parry's itinerary from his diaries (Parry 1867), succeeded in discovering the actual type locality. This locality, given on the original label as "New Mexico. On rocks, Huefano Mts, Sept., 1867, C. C. Parry 83", is to be found in Colorado, rather than New Mexico as generally supposed.

The morphological affinities of *Neoparrya* are quite obviously with *Aletes*, a small genus of three species limited also to the southern Rocky Mountains. *A. humilis* is a very restricted endemic found at only one station, along Dale Creek in Larimer County in north-central Colorado; *A. macdougalii* occurs on talus slopes of the Colorado Plateaus Province in the Four Corners region; and the most widespread species, *A. acaulis*, occupies a narrow zone along the eastern base of the Rocky Mountains from northern Colorado south into New Mexico, West Texas, and northern Mexico.

Both *Aletes* and *Neoparrya* are strongly xeromorphic, with thick, glossy, leathery-textured leaves with a basic pinnate form but with the leaflets tending to be ternately divided. The leaves arise basally from numerous caudices, forming mats of several

¹ University of Colorado Museum, Boulder.

² *Neoparrya lithophila* Mathias in Ann. Mo. Bot. Gard. 16: 393. 1929.

decimeters diameter. The flowers are yellow in *Aletes* (in *Neoparrya* they were unknown) and the rays of the umbel in both genera tend to be reflexed at maturity. The only feature by which *Neoparrya* seems to differ markedly from *Aletes* is in the oil-tubes which are of various sizes and are scattered through the pericarp instead of lying in a uniform row. The ecological preference of *Aletes* is rock ledges and cliffs, usually at altitudes of from 6,000 to 8,000 feet, where it forms conspicuous mats on the canyon sides. In anthesis the masses of yellow umbels are quite showy.

Aletes acaulis is an abundant and conspicuous species in the canyons of the east face of the Front Range in Colorado and New Mexico, and *Neoparrya* is similar enough in its general appearance, judging from the herbarium material, to indicate similar ecological preferences. Nevertheless the plant has eluded collectors for nearly a hundred years although it must, according to Parry's route, occur in a region rather extensively botanized. Dr. Mathias, who described the species in 1929, had hunted it unsuccessfully for many seasons in what she felt must be the type region.

Although the writer was unaware of the following quotation until after *Neoparrya* was rediscovered, it is interesting to find that Standley (1910) suspected that Parry's New Mexico localities of 1867 were incorrectly interpreted, for he says (concerning the type locality of *Artemisia Parryi* Gray): " 'Huefano Mts., New Mexico, Dr. C. C. Parry in September 1867'. This must have been collected in Colorado, for there is a range of this name in that state and none, so far as the writer knows, in New Mexico. The name should certainly read Huerfano instead of Huefano."

That Dr. Mathias had independently come to the same conclusion is apparent from her letters to the writer (1956):

"At the time I published the genus, away back in 1929, I had a number of sheets, since the original collection by Dr. Parry was a large one and widely distributed; and from the information on these sheets and from other notes which I was able to get and which I no longer have, I indicated that it was apparently collected on Huerfano Peak near Servilleta in Taos County. I have looked in that area and, so far, without any success. However, it is highly possible that it was collected in the canyon of

the Rio Grande, which is a little inaccessible in that area, as you know. . . . I have been on the plateau in New Mexico on both sides of the Rio Grande and I have also looked through large areas of the canyon of the Rio Grande and tributary canyons where I could get into them. The fruiting specimens were collected in September so that I do not believe I have been too late. I have gone into this area, now, in every month from June through late September without success. However, some of the perennial Umbelliferae manage to survive without maturing fruit over long periods of time and I may have been unfortunate in never hitting the area in a good year. It is one of those curious plants which I am certain will turn up sooner or later, and anything you can do in the way of looking will certainly be appreciated by us."

During this long search, Dr. Mathias' suspicion grew that the type locality was incorrectly understood.

"I had thought originally that it must have been collected in the Rio Grande Canyon, not far from Santa Fe or Taos, New Mexico. However, last summer when I was at the Missouri Botanical Garden library, I pulled out a number of the old reports on this expedition and it seems to me that it is just as likely that this plant may have been collected at the headwaters of Huerfano Creek somewhere in the neighborhood of La Veta Pass in southern Colorado. If so, it would be on the talus slopes, I suspect. I did look over the little Huerfano Peak near Walsenburg with a fine-toothed comb last summer, and I am certain it is not there. It probably was farther up the headwaters of the creek. This is a genus which you might watch for when you are in the southern part of the State. I would certainly be delighted to find it again."

In a study of the genus *Helianthella* (Weber, 1952), the writer had a similar experience in settling the type locality of *Helianthella parryi* Gray, and found evidence indicating that any plants which Parry collected in the 'Huefano Mts.' in 1867, were actually collected in Colorado rather than New Mexico, on the headwaters of Huerfano Creek.

Fortunately, several published documents concerning the 1867 expedition can be used effectively to plot the details of Parry's itinerary over the most critical part of the journey.

Probably the most important are the Parry notebooks, preserved in the Iowa State College Library, Ames, Iowa. A notebook for 1867, pp. 21-39, headed "Route from Fort Wallace to Fort Lyon on the Arkansas" records meteorological data taken along the course of the journey; dates and place names are linked and thus are of value in piecing together the exact route. Most of the localities mentioned may be found on the Huerfano Park Reconnaissance Map of 1892 (U. S. Geological Survey, 1892). The portion of this notebook pertaining to the plant collections made in the 'Huerfano Mountains' is abstracted below:

July, 13. Old Fort Lyon; 22. camp 10 mi. above Fort Lyon; 25. Timpas Creek near mouth; 26, 27. camp 5 mi. above mouth of Apishapa; 27. Apishapa Crossing. ranch 8 miles below mouth of Huerfano; 30. Wilton's Ranch on Huerfano 10 miles above mouth. Doyle's Ranch; 31. Craigs, bottom of Huerfano.

August, 1, 2. bottom of Huerfano; 2, 3. Corral de Toro; 4. camp at foot of Sierra Mojada [Wet Mountains]. Greenhorn Ridge, highest point reached; 5. two miles above mouth of Apache Creek. Patterson's Ranch. on Huerfano bottom; 6. two miles above Butte [presumably the Little Huerfano, a prominent volcanic plug in the plain at the mouth of the Huerfano]; Badito Ranch. foot of mountains; 7, 8. foot of mountains; camp 6 miles above Badito; 9. going to Sangre de Cristo Pass, 9 miles below; 10, 11. camp 6 miles above Badito; 11. camp 6 miles east of Pass; 12. oak grove 10 ft. above creek; 12-18. Sangre de Cristo Pass, on a bench below the crest; 19. survey station, Huerfano Valley; 27-29. Huerfano Valley below La Marsca [Mosca] Pass; 31. camp 1 mi. E. of Sangre de Cristo Pass; 31-Sept. 3. camp in Sangre de Cristo Valley 2 miles west of Pass.

Sept. 3-4. camp below Placer Creek; 4, 5. camp 3 miles above Fort Garland. (The journal ends here).

The mission of Parry's group along this route, as will be seen from some quotations to follow, was to investigate the feasibility of a railroad route through the Sangre de Cristo Pass. For this reason a great amount of time was spent in the Huerfano Creek drainage, and it was here that the bulk of the Parry plant collections were made. The available evidence implies that the rest of the journey, from Sangre de Cristo Pass to Fort Garland and on to Santa Fe, was a rapid one, which did not permit a leisurely study of the vegetation.

Other valuable tools for interpreting the 1867 collections are the narrative by Bell (1870) and the official report on the expedition by General Palmer (Palmer 1869). The Bell narrative contains,

as an appendix, the list of plants collected by Parry, together with their general localities ('Colorado', 'Fort Garland', 'Valley of the Huerfano', 'Sangre de Cristo' [Pass], 'Purgatoire Valley', 'Sierra Blanca', 'Greenhorn Mountains', 'Upper Huerfano', and 'Upper Arkansas'), but Parry implies slight errors, for he claimed (Parry 1878) that the list was printed without his having opportunity to revise it. As might be expected, '*Cynomarathrum saxatile* Nutt. in herb. Durand', the specimen subsequently described as *Neoparrya lithophila*, is listed as having been collected near 'Sangre de Cristo' [Pass].

Despite the fact that Parry's plant list as published in Bell (1870) reports many specimens from Colorado, Porter and Coulter (1874) in their Synopsis of the Flora of Colorado, do not cite any of Parry's 1867 collections. Either they did not see these specimens or believed them to have been collected, as the labels may have indicated, in New Mexico.

General Palmer's official report (Palmer, 1869) described the 'Huerfano Route' as follows:

"This was instrumentally examined by Mr. J. Imbrie Miller, Division Engineer, under direction of General Wright. It deflects from the Raton Mountain Line at Fort Lyon, and follows up the Valley of the Arkansas and its tributary—the Huerfano—to the summit of the 'Spanish Range' at the Sangre de Christo Pass, 141 miles from Fort Lyon—thence 50 miles southwestwardly to the Rio Grande, which it intersects near the mouth of the Culebro, at a point about 33 miles below Fort Garland, and thence down the Rio Grande to Albuquerque. The instrumental examination terminated on reaching the Rio Grande, where the elevation was found to be 7301 feet above tide—that at the summit of Sangre de Christo Pass being 9186 feet.

The 'Mosca Pass' was also surveyed by Mr. Miller, but he reports both that and the Sangre de Christo to be impracticable within the Congressional limit of grade (116 ft. per mile), and there is the additional objection of heavy winter snows."

Bell mentions the Huerfano route, and Parry's part in the work, briefly in the following excerpt (Bell, 1870):

"Early on the morning of the third day after our arrival in Santa Fe [Sept. 16], two of our friends came into the fonda—Calhoun and Imbrey Millar,—whom we parted with at Fort Lyon; and before evening all Millar's party arrived safe and sound, but much travel-stained and almost shoeless, from their mountain explorations. After leaving us at Fort Lyon, they had followed up the Arkansas and its tributary, the Huerfano, through the Sangre de Christo Pass to Fort Garland, a mili-

tary post in the centre of the Rocky Mountains of Colorado; and after examining some of the most favorable passes which lead from the heads of the Huerfano to the sources of the Rio Grande [Mosca Pass], they followed the latter stream for 200 miles down to Santa Fé." (pp. 148-149). . . . "On the Huerfano Route, Dr. Parry reports that he met with no workable coal" (page 114).

Judging from these several complementary source materials, it was abundantly clear that the Huerfano Mountains of Parry were not in New Mexico at all, but in Colorado; all that remained, then, for a successful solution to the problem of the lost *Neoparrya*, was a visit to the Sangre de Cristo Pass and the valley of the Huerfano, which rises just east of the Pass.

The actual story of the rediscovery is anticlimactic, for the area was accessible, the habitat was indicated, the weather cooperative and the season right. Sangre de Cristo Pass was quickly eliminated from consideration, being an overgrazed saddle in the upper montane aspen zone with no promising rock outcrops. More promising was the eastern approach to the pass along a gravel road which follows the base of some huge rock walls and taluses in the form of dikes radiating out from a prominent hill southeast of Sangre de Cristo Pass. A five-minute reconnaissance on the slope of one such dike was sufficient; *Neoparrya* was there in great abundance.³

As expected, *Neoparrya lithophila* bears a strong resemblance to *Aletes acaulis* in its caespitose habit and masses of stiff basal leaves, yellow flowers and rounded inflorescence with reflexed outer rays. Like *Aletes*, it occurs in crevices of rock outcrops with little soil, but despite its north exposure, the slope on which the plants grow is more arid than those customarily inhabited by *Aletes acaulis*, rather more like that of *A. macdougalii*. Associates of *Neoparrya* include *Pinus edulis*, *Leptodactylon pungens*, *Hymenoxys richardsonii* and *Gutierrezia sarothrac*. The yellow flowers, in late June, were already almost gone, an indication of how very late Parry's September collections were. Many mericarps were well developed, and thin sections verified the peculiar condition of the scattered oil tubes. Whether these

³ COLORADO. HUERFANO CO.: forming large clumps up to two feet in diameter among rocks on stabilized talus of a dike radiating from Dike Mountain, valley of South Oak Creek, between Badito and Sangre de Cristo Pass, 2 miles south and 4 miles west of Badito, ca. 7,000 ft. alt., 105°05' W. Long., 37°41' N. Lat. (Huerfano Park Sheet, Reconnaissance Map, U.S.G.S. ed. 1892), 29 June 1957, W. A. Weber & Laurent Gaudreau 10,571.

alone can maintain *Neoparrya* on the generic level, however, is a question which the writer does not feel ready at this time to resolve. Suffice it to say that the general morphology, phyto-geography, phenology, and ecological preference suggest an extremely close relationship with the three species of *Aletes*.

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